# OvaCare : PCOS Management App

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**ABSTRACT**

Polycystic Ovary Syndrome (PCOS) is a prevalent hormonal disorder affecting millions of women globally, often leading to irregular menstrual cycles, weight fluctuations, acne, and emotional stress. Traditional PCOS management approaches are limited to basic period tracking and generic health suggestions, lacking the personalization and predictive insights required for effective long-term care.

To address this gap, this project presents **OvaCare**, an AI-powered PCOS management system designed to offer a holistic, personalized, and data-driven approach to women's reproductive health. OvaCare allows users to log their symptoms, track their menstrual cycles, and receive AI-generated insights into their hormonal health. The system uses a Long Short-Term Memory (LSTM) model to predict upcoming menstrual cycle dates based on past data, enabling proactive planning and better understanding of cycle irregularities.

Beyond physical symptom tracking, OvaCare also focuses on emotional wellness by providing meditation resources and stress-relief exercises, promoting a balanced lifestyle. The application incorporates Google authentication for secure access, and leverages Flask and MongoDB for a responsive, scalable, and cloud-hosted infrastructure. Its intuitive interface ensures usability across web and mobile platforms.

By combining AI with practical health tools, OvaCare aims to revolutionize PCOS management—offering users not just insights, but actionable recommendations tailored to their personal health data. The result is an empowering, user-centric healthcare solution that enhances self-awareness, reduces anxiety around unpredictable symptoms, and improves overall quality of life for individuals managing PCOS.

## I INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a chronic endocrine disorder that manifests in a variety of symptoms such as irregular periods, excessive hair growth, acne, and obesity. It significantly affects reproductive health and quality of life in women. The growing prevalence of PCOS has created an urgent need for solutions that provide personalized and timely intervention. OvaCare aims to revolutionize PCOS management through technology. It provides a centralized platform that combines symptom tracking, AI-based prediction, and health monitoring. Unlike conventional health apps, OvaCare emphasizes holistic care by including mental health modules and emotional wellness guidance.

## II SCOPE

The scope of OvaCare includes:

- Daily symptom tracking including acne, mood swings, fatigue, and sleep cycles.
- Advanced hormonal trend detection using machine learning.
- Lifestyle suggestions (like food, yoga).
- Integration of mental health support such as

affirmations and meditation.

- AI based period predictions.
- Scalability to support thousands of concurrent users via cloud deployment.

## III LITERATURE SURVEY

Polycystic Ovary Syndrome (PCOS) is a chronic and complex hormonal disorder that affects millions of women worldwide, often leading to irregular periods, infertility, weight gain, acne, and mood disturbances. Despite its widespread prevalence, effective PCOS management tools remain limited, with many existing applications focusing solely on menstrual tracking without providing actionable insights or emotional wellness support. The growing interest in personalized and AI-driven healthcare solutions has prompted researchers and developers to explore intelligent systems for women's health management.

According to a case study by **Ghosh et al. (2021)**, the integration of AI into women's healthcare applications significantly improves user engagement and health outcomes by delivering personalized insights. Their study emphasized the need for data-driven systems capable of adapting to individual hormonal profiles and cycle variations, particularly for conditions like PCOS.

In another notable work, **Goyal and Rajput (2023)** proposed an AI-powered menstrual tracker that leveraged time-series prediction models to forecast cycle dates and potential irregularities. Their system, although limited in scope, demonstrated the effectiveness of LSTM (Long Short-Term Memory) networks in predicting upcoming cycles with improved accuracy compared to traditional static models.

**Kaur et al. (2022)** introduced a PCOS monitoring application that collected user-reported symptoms such as weight gain, mood swings, and hair loss, and offered general health tips. However, the system lacked advanced personalization and predictive capabilities, highlighting the gap that OvaCare aims to fill with its AI-powered insights and adaptive recommendations.

**Khan et al. (2020)** explored emotional wellness tracking in chronic disorder management systems and found that integrating features like journaling, guided meditation, and mood analysis contributed significantly to long-term adherence and mental well-being. Their findings support the mental health features embedded in OvaCare, which aims to treat both physical and psychological aspects of PCOS.

A relevant study by **Sharma and Dey (2021)** presented the use of MongoDB and Flask in building scalable, cloud-based health tracking platforms. Their architecture enabled rapid deployment, secure storage of user data, and support for real-time data visualization—an approach that OvaCare adopts to ensure performance, portability, and security.

Furthermore, **Nanda et al. (2019)** demonstrated the application of Google OAuth in safeguarding sensitive user data in healthcare apps. Their work supports OvaCare's secure authentication system, which uses Google sign-in to maintain user trust and streamline access.

Collectively, these studies validate the viability and growing need for intelligent, web-based health tracking systems that combine AI analytics, personalized guidance, and emotional wellness features. OvaCare builds upon these foundational works by offering a unified platform for PCOS management that predicts cycle patterns using LSTM, delivers tailored lifestyle and wellness recommendations, and ensures a user-centric experience with a secure and scalable technical infrastructure.

By bridging the gap between basic tracking tools and intelligent health support, OvaCare advances the current state of PCOS management and aligns with the ongoing shift toward personalized digital healthcare solutions.

## IV PROBLEM STATEMENT

- Existing PCOS tracking applications are limited to basic menstrual logging and do not provide personalized insights based on hormonal trends.
- There is no AI-driven prediction of future menstrual cycles or symptom flare-ups, reducing the ability to plan and manage the condition effectively.
- Users do not receive real-time updates or smart notifications about important health events like ovulation, upcoming periods, or missed medication.
- Most platforms fail to address mental and emotional health, despite the high stress and anxiety commonly associated with PCOS.
- Current systems often provide generalized recommendations that do not adapt to individual user profiles or evolving symptoms.
- There is a lack of secure, centralized data handling, making personal health data vulnerable or poorly managed.
- Existing solutions are not scalable, do not integrate modern AI models, and may lack support for cross-platform accessibility.
- Manual symptom tracking can be time-consuming, inconsistent, and prone to user fatigue, reducing long-term adherence to care plans.

## V PROPOSED SYSTEM

The proposed system, OvaCare, is a smart, web-based PCOS management platform developed to assist users in tracking and managing their condition more effectively. Unlike traditional health apps that offer only basic menstrual logging, OvaCare provides a more advanced experience by integrating AI-powered menstrual cycle prediction and symptom logging into a single, intuitive platform.

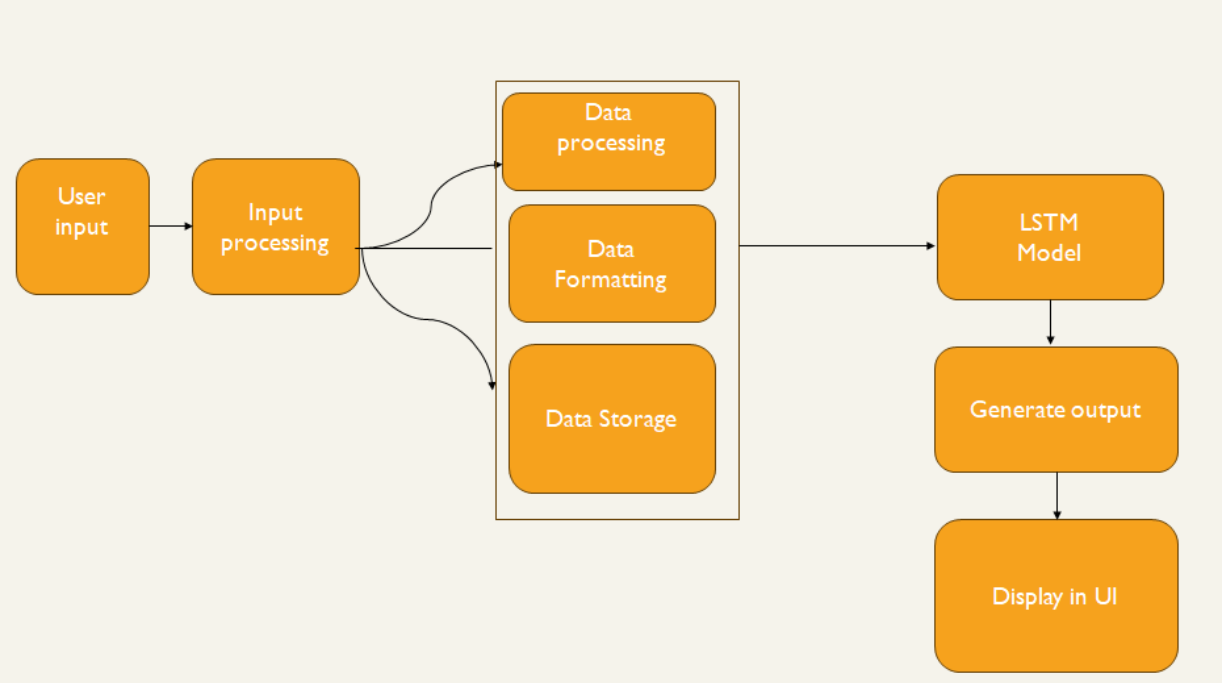
At the core of the system is a Long Short-Term Memory (LSTM) model that predicts the user's next period start date based on past cycle data. While ovulation prediction is not currently included, the period forecasting feature allows users to anticipate and plan for upcoming menstrual events.

OvaCare offers generalized lifestyle recommendations related to diet and exercise, helping users adopt healthier habits. Although the suggestions are not yet fully personalized, they are aligned with common PCOS wellness guidelines and are intended to support better symptom management.

Additional features include mood and symptom tracking, and mental wellness support through stress management tools such as guided meditation. For backend management, the system uses Flask and MongoDB, ensuring a scalable and secure infrastructure. The platform is designed to be accessible across web browsers, supporting both mobile and desktop use.

By combining menstrual cycle prediction with essential health tools and AI-based analytics, OvaCare provides a structured, proactive, and user-friendly approach to managing PCOS, reducing reliance on manual tracking and empowering users to take better control of their reproductive health.

## VI ARCHITECTURE




## IMPLEMENTATION

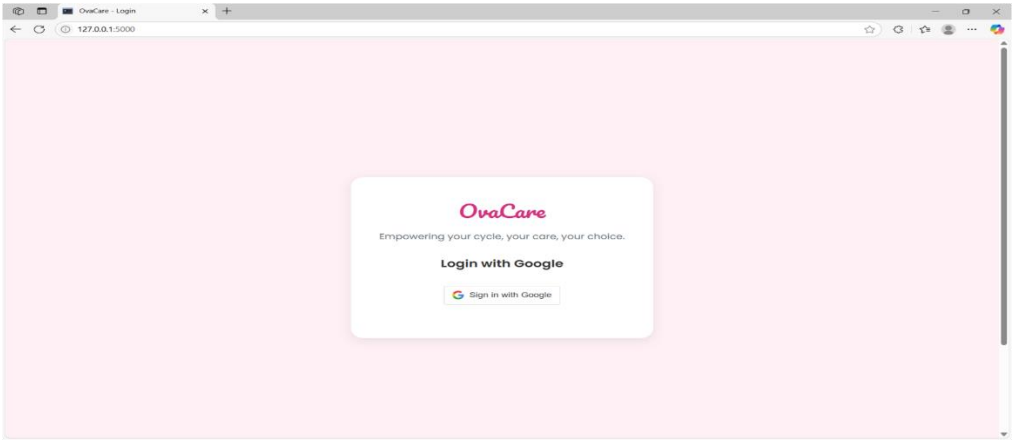
**Admin**

- Login (username, password)
- View All Users
- Monitor User Activity & Health Logs
- Manage Articles and Educational Content (add/edit/delete)
- View AI Prediction Logs (cycle prediction results)
- Monitor System Analytics
- Logout

**User**

- Register / Login (Google Sign-In supported)
- Input Period Dates
- View Predicted Next Period Date
- Log Daily Symptoms (e.g., mood, fatigue, etc.)
- View Lifestyle Recommendations (diet, exercise – general)
- Access Mental Wellness Tools (meditation, stress relief exercises)
- View Personal Health Dashboard
- Logout

## VIII RESULTS


OvaCare - Login
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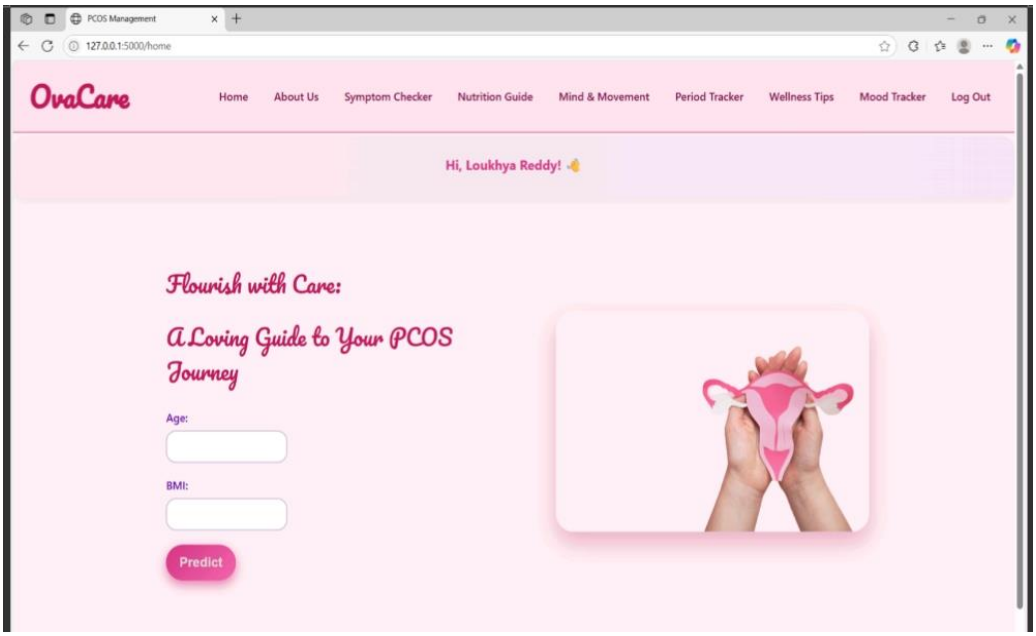
OvaCare
Empowering your cycle, your care, your choice.
Login with Google
Sign in with Google


PCOS Management
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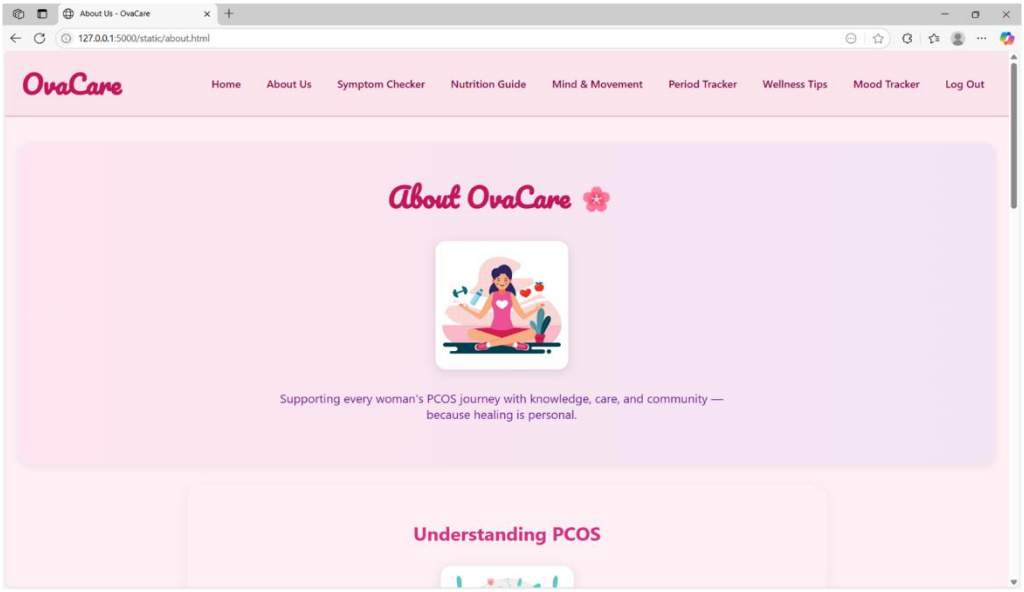
Hi, Loukhya Reddy!
Flourish with Care:
A Loving Guide to Your PCOS Journey
Age:
BMI:
Predict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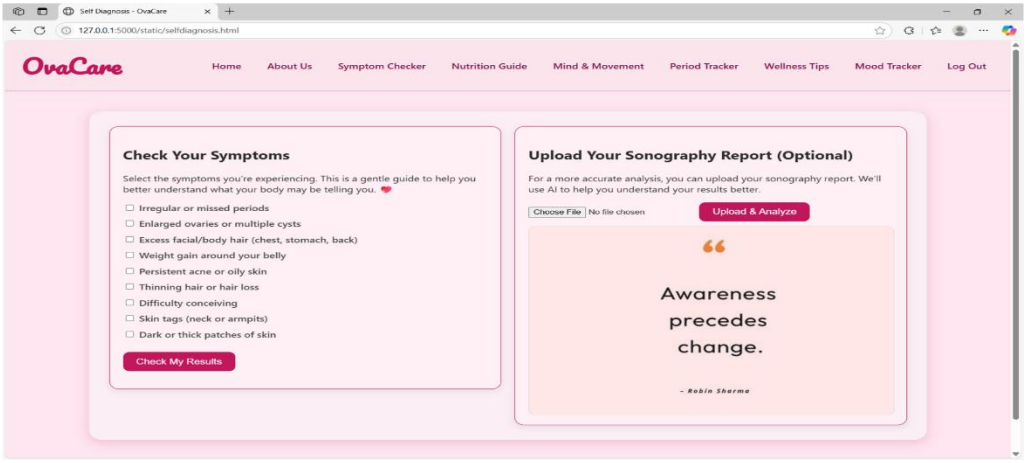
About OvaCare
Supporting every woman's PCOS journey with knowledge, care, and community — because healing is personal.
Understanding PCOS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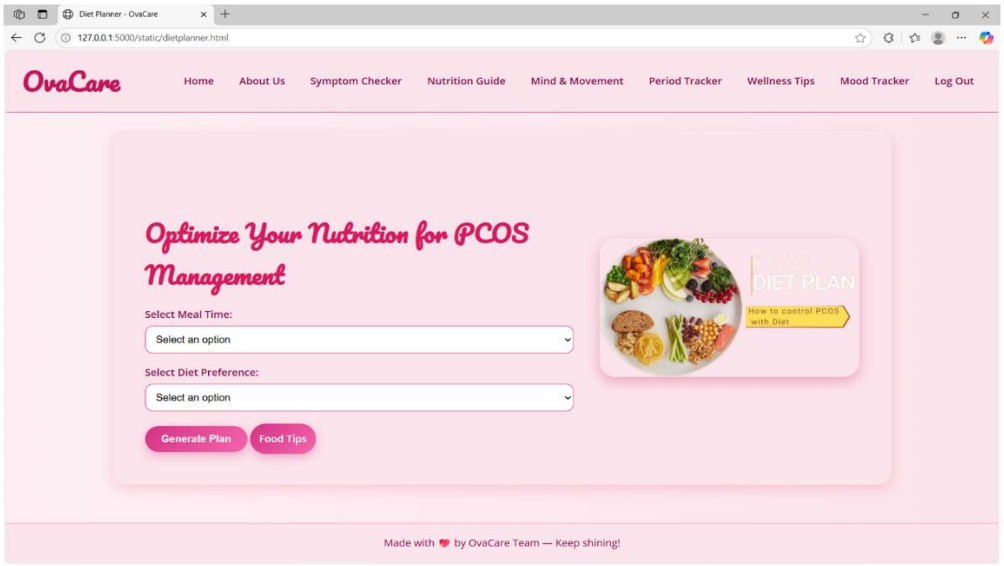
Check Your Symptoms
Select the symptoms you're experiencing. This is a gentle guide to help you better understand what your body may be telling you.
Irregular or missed periods
Enlarged ovaries or multiple cysts
Excess facial/body hair (chest, stomach, back)
Weight gain around your belly
Persistent acne or oily skin
Thinning hair or hair loss
Difficulty conceiving
Skin tags (neck or armpits)
Dark or thick patches of skin
Check My Results
Upload Your Sonography Report (Optional)
For a more accurate analysis, you can upload your sonography report. We'll use AI to help you understand your results better.
Choose File
No file chosen
Upload & Analyze
Awareness precedes change.
- Robin Sharma


Diet Planner - OvaCare
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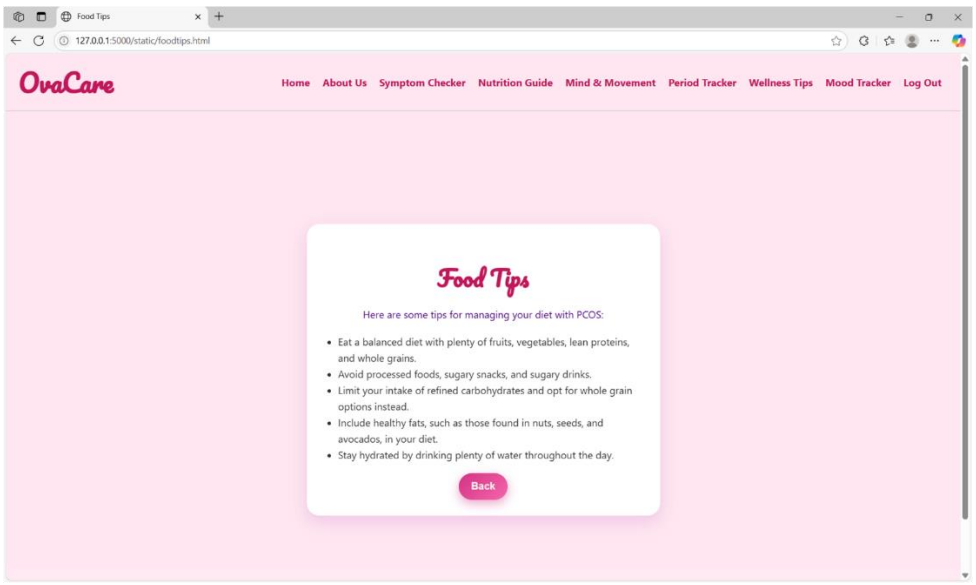
Optimize Your Nutrition for PCOS Management
Select Meal Time:
Select an option
Select Diet Preference:
Select an option
Generate Plan
Food Tips
DIET PLAN
How to control PCOS with Diet
Made with by OvaCare Team — Keep shining!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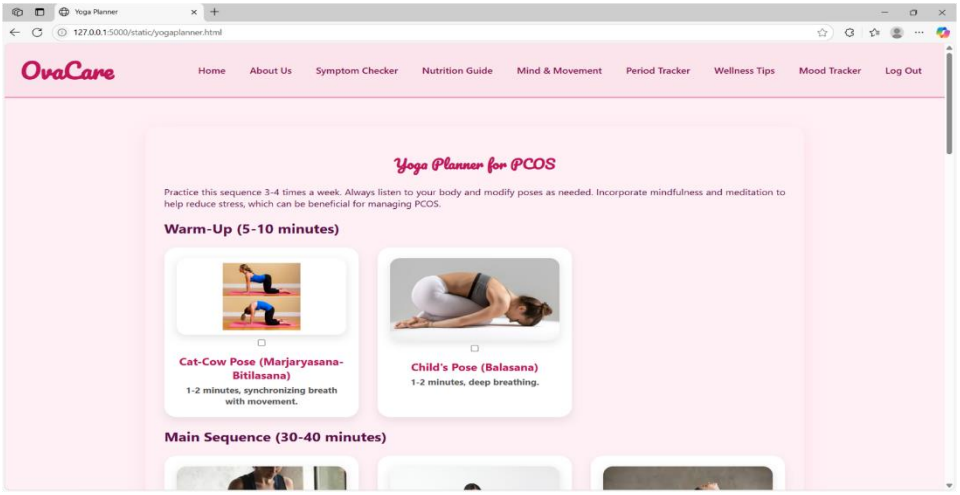
Food Tips
Here are some tips for managing your diet with PCOS:
Eat a balanced diet with plenty of fruits, vegetables, lean proteins, and whole grains.
Avoid processed foods, sugary snacks, and sugary drinks.
Limit your intake of refined carbohydrates and opt for whole grain options instead.
Include healthy fats, such as those found in nuts, seeds, and avocados, in your diet.
Stay hydrated by drinking plenty of water throughout the day.
Back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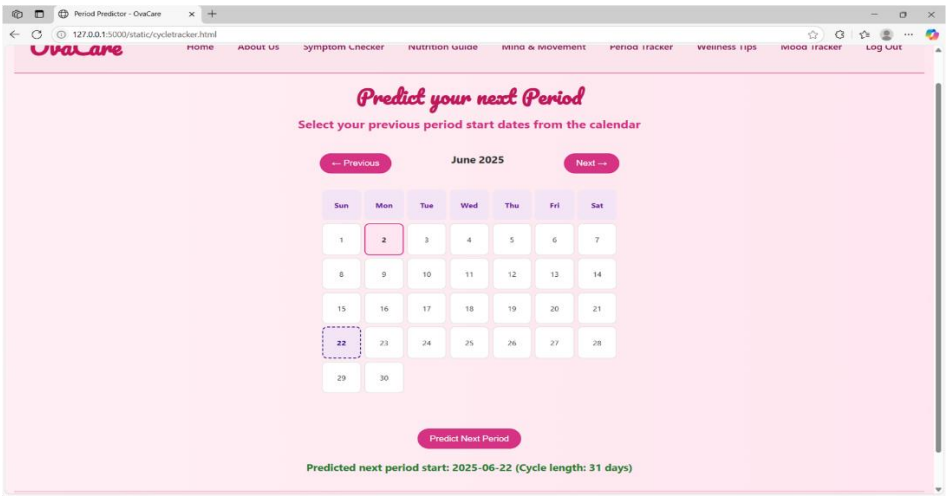
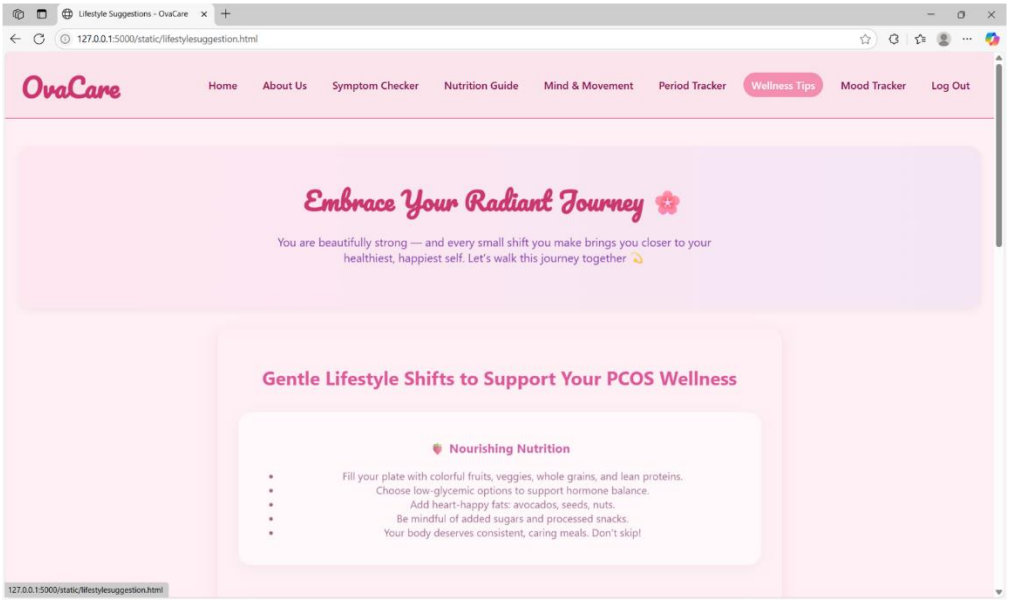
Yoga Planner for PCOS
Practice this sequence 3-4 times a week. Always listen to your body and modify poses as needed. Incorporate mindfulness and meditation to help reduce stress, which can be beneficial for managing PCOS.
Warm-Up (5-10 minutes)
Cat-Cow Pose (Marjaryasana-Bitilasana)
1-2 minutes, synchronizing breath with movement.
Child's Pose (Balasana)
1-2 minutes, deep breathing.
Main Sequence (30-40 minutes)


Predict your next Period
Select your previous period start dates from the calendar
← Previous
June 2025
Next →
Sun
Mon
Tue
Wed
Thu
Fri
Sat
Predict Next Period
Predicted next period start: 2025-06-22 (Cycle length: 31 days)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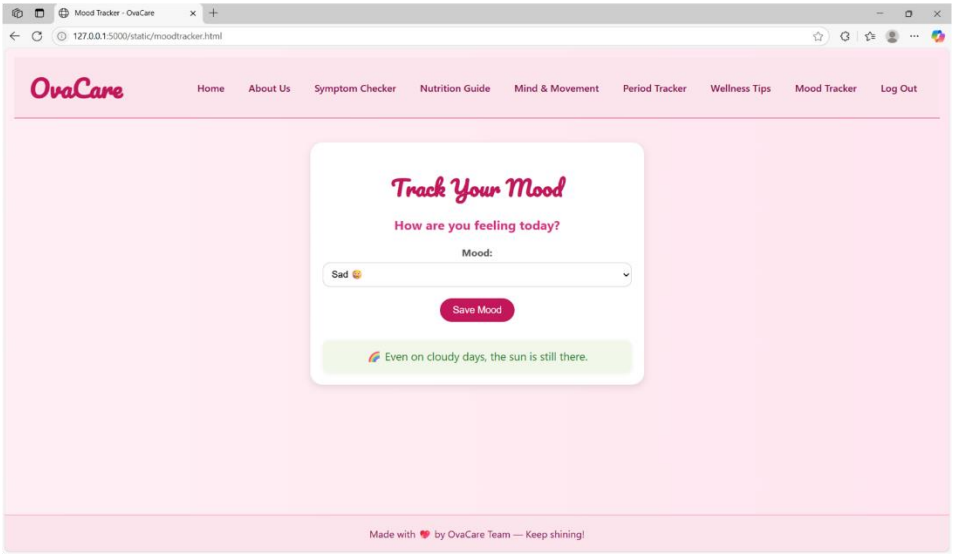
Embrace Your Radiant Journey
You are beautifully strong — and every small shift you make brings you closer to your healthiest, happiest self. Let's walk this journey together
Gentle Lifestyle Shifts to Support Your PCOS Wellness
Nourishing Nutrition
Fill your plate with colorful fruits, veggies, whole grains, and lean proteins.
Choose low-glycemic options to support hormone balance.
Add heart-happy fats: avocados, seeds, nuts.
Be mindful of added sugars and processed snacks.
Your body deserves consistent, caring meals. Don't skip!




## CONCLUSION

OvaCare is a smart, AI-powered PCOS management system that addresses the limitations of traditional tracking tools by offering features such as menstrual cycle prediction using LSTM, symptom logging, real-time alerts, and general lifestyle recommendations. The platform also supports mental wellness through stress-relief tools like guided meditation, creating a more holistic approach to managing PCOS. While ovulation prediction and fully personalized recommendations are not yet implemented, OvaCare significantly enhances user experience by reducing the burden of manual tracking and providing timely, data-driven insights. Built with a secure and scalable architecture using Flask and MongoDB, the system ensures privacy and cross-platform accessibility. Overall, OvaCare empowers users with greater control over their health and lays the foundation for more advanced, personalized care solutions in the future.

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